

hyperlinks to all of the ensoServices™ including ensoMail™, ensoNews™, ensoWeb™, ensoChat™, and anonymous FTP. All future ensoServices™ will be integrated into a subscriber's portal as well.

In addition to ensoServices™, the ensoPortal™ also contains links to most frequently accessed Internet resources such as search engines, local and international news, sports, financial news, games, personal information managers, etc. This information is tailored on a franchise-by-franchise basis to compensate for different subscribers' interests amongst each franchise.

### **ensoMail™**

The ensoBox™ uses Communicate Pro email, which is a web based email application that supports POP3, ESMTP, IMAP, APOP, SSL, and other mail protocols. It integrates with LDAP so that subscriber provisioning is performed via the LDAP interface. It also supports web page publication, has anti-spam features, and a configurable web interface. While a subscriber cannot limit attachment size, he can limit the total size of any outgoing or incoming email message.

Subscribers access their mail through a standard web based user interface such as Netscape Navigator or Internet Explorer. Email sessions are secured via an SSL connection between the subscriber's computer and the ensoBox™ mail server. ensoMail™ can be accessed from anywhere on the Internet, regardless of whether or not the subscriber is directly connected to the ensoBox™ or not.

### **ensoWeb™**

ensoWeb™ offers subscribers the capability to publish and maintain their own web site. In addition, Communicate Pro supports a web page module that allows subscribers to upload web pages that they have already created elsewhere. Subscribers will be subject to quotas on both disk space and number of files stored. Requests for additional disk space are handled by the ISP Franchise.

### **ensoChat™**

ensoChat™ offers subscribers a real-time chat application. Subscribers can chat with other ensoBox™ subscribers on any topic they wish. ensoChat™ is a standard service offering that is available to all subscribers. Access to ensoChat™ services is through the ensoPortal™.

### **ensoNews™**

ensoNews™ allows subscribers to access Usenet newsgroups through the ensoPortal™. ensoNews™ is a standard service offering available to all subscribers.

Usenet News is a world-wide discussion and conferencing system. Subscribers can submit messages to specific news groups related to their message topic (e.g., arts, science, literature, sports). Messages are posted on a local news server. Local news servers distribute news group messages to other news servers throughout the world using the Internet. To read messages, individuals access their local news server and download messages of interest.

Newsgroups are arranged in a tree structure such as rec.sport.baseball.pro. The suffix rec. is the top of the tree. The ensoBox™ news servers will be used by subscribers to read messages of interest.

### ***anonymous FTP***

This service allows subscribers to download Internet shareware from the ensoBox™. Shareware will be downloaded to an ensoBox™ FTP server by ensoport.com™ NOC personnel. Once the shareware is downloaded to an ensoBox™, subscribers can download the information to their computer by establishing an anonymous FTP session to the ensoBox™ anonymous FTP server.

### ***ensoVDO™***

ensoVDO™ is a standards based video conferencing service that is available to all subscribers. Unlike most of the other services, video conferencing is a fee based service, and is not part of the standard suite of ensoServices™.

## **Technical Description**

### ***Technical Overview***

The ensoBox™ is an integration of telecommunications hardware and software, including a router, Fast Ethernet switches, Remote Access Servers, a Caching Appliance, Load Balancer, DNS servers, AAA servers, application servers, and a network based data storage system. The integration of these components provides the functionality of an ISP appliance. It allows subscribers to remotely access the Internet through dial-up modems. It also offers a suite of services called ensoServices™ that includes: web portal, email, web hosting, chat, and news. Lastly, it provides all of the necessary tools for an entrepreneur to build and manage a successful ISP Franchise.

The functionality of the ensoBox™ is divided into three modules, or nodes, called the Core Node, Access Node, and Services Node. Each node contains a Console Server (Black Box 40871 Terminal Server) that allows the ensoport.com™ Network Operations Center (NOC) to remotely manage each component of the ensoBox™. Remote management is achieved in this manner by initiating a telnet session to the console server, and then initiating another telnet session from the Console Server to the appropriate hardware component. Component management can also be achieved by establishing a telnet session directly to each component's network interface port (each component, including the UPS, has a Public IP address associated with it), or by dialing into each component directly via a serially attached modem. Management through a modem is available in the event there is no Internet connectivity to the ensoBox™. Each node also consists of a 10/100 Mbps auto-sensing Fast Ethernet switch (Cisco Catalyst 2924) that is used to connect ensoBox™ components to one another and support Virtual Local Area Networks (VLANs). The ensoBox™ is configured with five (5) VLANs:

VLAN Name	VLAN Number	VLAN Color
Services	100	GREEN
Management	200	PINK
Core	300	YELLOW
Franchise	400	BLUE
Subscribers	500	RED

Table 4. VLAN Descriptions

VLANs ensure that ensoBox™ services and components are accessed by authorized people only. For example, the Management VLAN ensures that only the ensoport.com™ NOC can access components through that VLAN. It is off limits to subscribers, ISP Franchises, etc.

Two Public Class C IP addresses support dynamic IP addressing for dial-up subscribers. A third Public Class C IP address is used to address the ensoBox™ components. The one (1) Public Class C IP address used for addressing the ensoBox™ components is subnetted into 4 subnets where each subnet supports up to 62 hosts (each subnet consists of 64 IP addresses, but one IP address is reserved for the network address and a second IP address is reserved for the broadcast address). In terms of classless IP addressing, each component network has a CIDR suffix of /26. The two Class C IP addresses reserved for dynamic IP addressing of remote users has a CIDR suffix of /24. The network addresses for each VLAN are as follows:

VLAN Name	VLAN Number	Network Address
Services	100	A.B.C.0/26